REMARKS

Claims 1 to 19 are pending in the application; new claims 18 and 19 have been added.

Rejection under 35 U.S.C. 102

Claims 1, 2, 4-10 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Ushida (US 5,960,757)*.

This prior art device discloses a controlling apparatus for varying the rotational phase between input and output shafts. The locking element (stopper piston) 7 arranged in the vane rotor 9 is loaded by a spring 18 in the direction toward the stopper bore 20 in the front plate 4. In order for the stopper piston 7 to be moved against the force of the spring 18, the pressure medium is introduced into the pressure chamber 24 provided in front of the end face of the stopper piston 7. Blocking of the rotor 9 relative to the stator 1, 3, 4 is realized, as illustrated in Fig. 2, in the most-retarded position of the rotor vanes 9a, 9b. In this position, the rotor vanes 9a, 9b rest substantially against the retard side of the stays 3a, 3b of the housing 3 (see paragraph bridging columns 11 and 12).

In contrast to this, in the device according to the invention the locking of the rotor 2 on the stator 1 is realized in a central position between the stays. This is disclosed in paragraphs 0043 and 0052 ("... the rotor 2 is locked in a central position relative to the stator"). Also, the drawings show the locking position of the rotor 2, for example, in Figs. 9 and 11 (the sides of the rotor vane are equally spaced from the sides of the stator stays). Because of the central position of the locking bore 27 the locking element 23 can be easily moved into the locking position.

In contrast to this, in the device of the prior art the stopper bore 20 and the stopper piston 7as well as the rotor vanes 9a in which the stopper piston 7 is supported must be precisely manufactured and aligned relative to one another so that in the contact position of the rotor vanes at the stator (stays 3a, 3b of the shoe housing 3) the stopper piston 7 can reliably engage the stopper bore 20. When the stopper bore 20 is arranged too close to the stays 3a, 3b, the rotor vanes 9a, 9b cannot rotate far enough for the stopper piston 7 to reach the stopper bore 20. As soon as the rotor vanes 9a, 9b contacts the corresponding stays 3b, 3a, a further rotation of the vane rotor 9 is no longer possible.

In the device according to the invention the central position of the locking bore 27

ensures that the locking element 23 can always engage the locking bore 27, even in the case of manufacturing tolerances of the locking element 23 and the locking bore 27 because the central position provides enough "play" in both rotational directions to enable engagement.

Claim 1 as amended is therefore not anticipated or obvious in view of the prior art reference and should be allowable together with its dependent claims. Reconsideration and withdrawal of the rejection of the claims pursuant to 35 USC 102 are therefore respectfully requested.

Rejection under 35 U.S.C. 103

Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over *Ushida (US 5,960,757)* and *Golovatai-Schmidt et al. (US 2003/0084863)*.

In the device of *Golovatai-Schmidt et al.*, the locking bore is also not centrally arranged between stays 7, 8 of stator 1, as shown in Fig. 2. In the locked position of Fig. 2, the vanes 11 contact the boundary walls 7. Moreover, the locking bore 16, as shown in Fig. 2, is positioned radially inwardly of the stator stays 7 in the area of hub 10. Therefore, a person skilled in the art would not have arrived at the solution claimed in instant claim 1. Claim 3 as a dependent claim of claim 1 should therefore be allowable also.

Claims 11-15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Ushida (US 5,960,757)* and *Ichinose et al. (JP 2001-41012)*.

The Japanese reference 2001-41012 shows an adjusting device where the looking bore 261, as shown in Fig. 22, is arranged such that locking bolt engages this bore only when the rotor vane contacts the stator stay; this corresponds to the embodiments of *Ushida (US 5,960,757)* and *Golovatai-Schmidt et al. (US 2003/0084863)*. Therefore, a person skilled in the art would not have arrived at the solution claimed in instant claim 1. Claims 11-15 as dependent claims of claim 1 should therefore be allowable also.

Claims 16, 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Ushida (US 5,960,757)* and *Trzmiel et al. (US 6,085,708)*.

U.S. 6,085,708 discloses an adjusting device without locking action. Therefore, this reference cannot provide any teaching in regard to the central arrangement of the locking bore between the stator stays. A person skilled in the art would not have arrived at the solution claimed in instant claim 1 in view of *Trzmiel et al.* Claims 16-17 as dependent

claims of claim 1 should be allowable also.

New Claims 18 and 19

In claim 18, a special configuration of the supply grooves 35 and 36 is claimed. The supply groove 36 supplies pressure medium to the end face (piston surface) 28 of locking element 23. The supply groove 35 communicates with annular chamber 34 that surrounds the locking element 23 up to its radial outwardly oriented flange 29 so that the pressure medium contained within the annular chamber 34 loads the flange 29 and ensures that the locking element 23 is secured against the force of the pressure spring 24.

As can be seen in the drawings, these supply grooves 35, 36 are arranged such that the rotor vane 8' directly after starting of the motor will close completely the supply grooves 35 and 36, as illustrated in Fig. 3. But the supply grooves 35, 36 are sequentially released upon rotation of the rotor 2 relative to the stator 1. First, the supply groove 36 is released (Figs. 5 and 6) so that the pressure medium contained in the supply groove 36 can flow into the pressure chamber 12. The other supply groove 35 is still closed by the rotor vane 8' at this time. As long as the supply groove 35 is closed by the rotor vane 8', the pressure medium cannot escape so that the locking element 23 is secured in its release position. Only when the rotor vane 8' has been rotated to such an extent that the supply groove 35 is connected to the chamber 12 (Fig. 13) the pressure medium can escape. The surfaces 28 and 29 of the locking element are no longer loaded by the pressure medium, and the pressure spring 24 can now force the locking element 23 into the locking bore 27.

Claim 18 sets forth that the locking element is moveable from the locking position into a release position by the pressure medium supplied by first and second supply grooves to independently load a first surface and a second surface of the locking element, respectively. The first and second supply grooves are closed by a first vane of the rotor for securing the locking element in the release position. When an engine of the motor vehicle is started, the rotor rotates and moves the first vane so that the first supply groove is opened first to relieve the pressure medium acting on the first surface of the locking element and the second supply groove is opened subsequently upon further rotation of the rotor to relieve the pressure medium acting on the second surface of the locking element so that the locking element moves from the release position into the locking position.

Such a configuration is not disclosed in *Ushida* and *JP 2004-41012*, alone or in

combination since neither reference discloses the sequential relief of pressure from the two pressure-loaded surfaces of the locking element caused by the rotation of the rotor.

Claim 19 relates to the throttle 37 and 38 that prevent a movement of the locking bolt 23 that is too fast in the area of the locking bore 27 (see paragraph 0054 and 0055). The throttle grooves 37 and 38 communicate, depending on the rotational position of the rotor, with a throttle bore 41 in the rotor vane; this is also clearly disclosed in the drawings showing the incremental changes taking place upon rotation of the rotor. Such an overlapping configuration of throttle grooves in the stator and vanes of the rotor is not disclosed in *Trzmiel et al.*. This reference shows a throttle location 43' between the outer circumference of the inner part 14 and the radial inward end of the rib 22'c. This throttle 43' is always open and connects the neighboring pressure chambers.

Claim 19 is therefore not obvious in view of the cited references *Ushida* and *Trzmiel*.

CONCLUSION

In view of the foregoing, it is submitted that this application is now in condition for allowance and such allowance is respectfully solicited.

Should the Examiner have any further objections or suggestions, the undersigned would appreciate a phone call or **e-mail** from the examiner to discuss appropriate amendments to place the application into condition for allowance.

Authorization is herewith given to charge any fees or any shortages in any fees required during prosecution of this application and not paid by other means to Patent and Trademark Office deposit account 50-1199.

Respectfully submitted on January 31, 2005,

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